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MINERAL INDUSTRY SURVEYS

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NICKEL IN MARCH 1997

Reported domestic nickel consumption in March, on a daily average basis, was 10% less than that of February, according to the U.S. Geological Survey. Decreases occurred in 9 of the 10 end-use categories — the exception being superalloys. Daily usage by the stainless steel industry was down 2% from the February average of 111 metric tons (t). Consumption of elemental nickel to make nickel-base corrosion resistant alloys decreased 23%. Sales to plating companies averaged 37 t per day, slightly less than in February. Percentages reported in this paragraph may not be verifiable owing to the concealment of company proprietary data. Trade data for March will appear in a subsequent issue.

Anaconda Nickel begins development of Murrin Murrin

In May, Anaconda Nickel Limited began developing the Murrin Murrin nickel and cobalt deposit in Western Australia. The limonitic laterite deposit is 55 kilometers east of Leonora and 65 kilometers southwest of Laverton, near Lake Carey. According to Anaconda officials, recent infill drilling indicates that the deposit has at least 128 million tons of low-magnesium resources averaging 1.01% nickel and 0.064% cobalt (Anaconda Nickel Limited, 1997).

The project is a joint venture of Anaconda (60% equity) and Glencore International AG of Switzerland (40%). The construction of the open pit mine and pressure acid leach plant is expected to cost A$900 million, or about US$655 million at the current exchange rate. Fluor Daniel Australia Ltd. is responsible for the overall design and engineering. Sherritt International Corp. is supplying the technology for hydrometallurgically extracting the nickel and cobalt from the laterite. Carey Mining Pty. Ltd., an aboriginal owned contract mining company, is clearing the site and building roads. In July, Concrete Constructions of Sydney, New South Wales, began constructing the foundations for the processing facilities. Monsanto Enviro-Chem Systems, Inc. will build the 1.5 million-ton-per-year sulfuric acid plant, while Linde Gas Pty. Ltd. will build the hydrogen plant.

Financing of the project was finalized in July, with Natwest Capital Markets, Salomon Brothers Inc. and CIBC Wood Gundy Capital agreeing to underwrite a US$400 million note issue in the United States. NatWest's parent, National Westminister Bank Plc., is providing A$105 million up front so that development can proceed as scheduled.

Development will be carried out in two stages. Commissioning is scheduled for the fourth quarter of 1998. At the end of the first stage, the mining and extraction complex will have an annual capacity of 40,000 tons of nickel and 3,500 tons of cobalt (Metal Bulletin, 1997). The second stage will raise the capacity of the operation to 75,000 tons of nickel and 4,500 tons of cobalt.

References Cited

Anaconda Nickel Limited, 1997, Report for quarter ended June 30, 1997: West Perth, Australia, Anaconda Nickel Limited, 11 p. (Accessed September 5, 1997, on the World Wide Web at URL http://www.oberon.com.au/Anaconda_Nickel/)

Metal Bulletin, 1997, Work begins on Murrin Murrin development: Metal Bulletin, no. 8177, May 12, p. 5.

Prepared by the Metals Section and the Data Collection and Coordination Section, September 10, 1997.

TABLE 1
CONSUMPTION OF NICKEL (EXCLUSIVE OF SCRAP), BY FORM AND USE 1/

(Metric tons, nickel content)

Period	Cathodes, pellets, briquets, and powder	Ferronickel	Oxide-sinter, salts, and other forms	Total	Total year to date
1996:					
March	6,760	1,480	318	8,560	25,800
April	6,620	1,490	249	8,360	34,200
May	7,050 r/	1,470	285	8,800 r/	43,000
June	6,710	1,530	236	8,480	51,400 r/
July	6,520 r/	1,160	131	7,810 r/	59,300 r/
August	6,340 r/	1,450	140	7,930 r/	67,200 r/
September	6,050 r/	1,540	178	7,770 r/	75,000 r/
October	6,740 r/	1,750	320	8,810 r/	83,800 r/
November	5,700 r/	1,340	365	7,400 r/	91,200 r/
December	5,690 r/	1,660	181	7,540 r/	98,700 r/
January-December	78,100 r/	17,600	2,980	98,700 r/	XX
1997:					
January	6,900 r/	2,000	101	9,000 r/	9,000 r/
February	5,950 r/	1,510	128 r/	7,590 r/	16,600 r/
March:					
Steel:					
Stainless and heat resisting	1,740	1,470	W	3,220	10,600
Alloy (excludes stainless)	358	W	W	358	2,030
Superalloys	845	--	W	845	2,230
Copper-nickel alloys	W	W	--	W	W
Electrical, magnetic, and expansion alloys	W	--	--	W	W
Other nickel & nickel alloys	W	W	W	W	W
Cast iron	W	--	W	W	W
Electroplating (sales to platers)	1,150	--	W	1,150	3,600
Chemical and chemical uses	W	--	W	W	W
Other uses	1,610	112	253	1,970	5,690
Total reported	5,700 2/	1,580	253	7,540	24,100
Total all companies (calc) 3/	XX	XX	XX	11,000	35,100
1997: January-March	18,500	5,100	482	24,100	XX
1996: January-March	20,700	4,210	894	25,800	XX

r/ Revised. W Withheld to avoid disclosing company proprietary data; included in "Other uses" category. XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Of consumption, 4,900 metric tons were consumed as cathodes and pellets, the remainder as briquets and powder.

3/ Figures represent calculated apparent consumption; based on the revised proportion of reported primary consumption (68.69%) to apparent primary consumption for 1994.

TABLE 2
ENDING STOCKS OF NICKEL (EXCLUSIVE OF SCRAP) HELD BY CONSUMERS, BY FORM AND USE 1/ 2/

(Metric tons, nickel content)

Period	Cathodes, pellets, briquets, and powder	Ferronickel	Oxide-sinter, salts, and other forms	Total
1996:				
March	4,610	207	69	4,890
April	4,430	131	81	4,640
May	4,080 r/	342	92	4,510 r/
June	3,610 r/	337	91	4,040 r/
July	3,450 r/	516	70	4,030
August	3,340 r/	429	77	3,850 r/
September	2,910 r/	276	82	3,270 r/
October	2,770 r/	473	82 r/	3,320 r/
November	6,170 r/	642 r/	64	6,880 r/
December	4,990 r/	1,540	78 r/	6,610 r/
1997:				
January r/	4,370	659	55	5,080
February r/	3,980	231	180	4,390
March:				
Steel (stainless, heat resisting and alloy)	2,210	227	(3/)	2,440
Nonferrous alloys 4/	1,660	(5/)	(3/)	1,660
Foundry (cast irons)	(3/)	--	(3/)	(3/)
Chemical (catalysts, ceramics, plating salts, etc.) and unspecified uses	140	--	617	757
Total	4,020	227	617	4,860

r/ Revised.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Stocks held by companies that consume nickel in more than one end use category are credited to the major category. Stocks are subject to revisions owing to inventory adjustment.

3/ Included in "Chemicals and unspecified uses" category .

4/ Includes superalloys, nickel-copper and copper-nickel alloys, permanent magnet alloys, and other nickel alloys.

5/ Included in "Chemicals and unspecified uses" category of "Oxide-sinter, salts, and other forms" .

TABLE 3
CONSUMPTION AND ENDING STOCKS OF PURCHASED SECONDARY NICKEL, BY USE 1/

(Metric tons, nickel content)

	Consumption			Stocks		
Period	Ferrous scrap 2/	Nonferrous scrap 3/	Total scrap	Ferrous scrap 2/	Nonferrous scrap 3/	Total scrap
1996:						
March	4,650	965	5,620	3,980 r/	91	4,070 r/
April	3,910	815	4,730	3,730	90	3,820
May	4,100	783	4,880	3,100	100	3,200
June	3,770	625	4,400	3,050 r/	101 r/	3,150 r/
July	3,670	680	4,350	3,300 r/	97	3,390
August	2,860	1,070	3,930	3,350	98	3,450 r/
September	3,490	961 r/	4,350	3,090	110 r/	3,200
October	3,590 r/	763 r/	4,360	3,340	107	3,440
November	3,250	775	4,020	3,630	89	3,720
December	3,310	646	3,960 r/	3,520	88	3,610
1996: January-December	43,400	10,100 r/	53,500 r/	XX	XX	XX
1997:						
January	4,800 r/	844 r/	5,650 r/	3,160	116 r/	3,280 r/
February	3,880 r/	805 r/	4,690 r/	3,310 r/	114 r/	3,420
March	4,250	1,010	5,260	4,110	104	4,210
1997: January-March	12,900	2,660	15,600	XX	XX	XX
1996: January-March	11,500	2,710	14,200	XX	XX	XX

r/ Revised. XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Nickel content is calculated from an average nickel content and the reported gross weight of scrap.

3/ Combined consumption and stocks of aluminum-base, copper-base, and nickel-base scrap.

TABLE 4
U.S. IMPORTS FOR CONSUMPTION OF NICKEL, BY COUNTRY 1/

(Metric tons, nickel content 2/)

Period and country of origin	Cathodes, pellets, and briquets	Powder and flakes	Ferro-nickel	Metal-lurgical-grade oxide	Waste and scrap	Stainless steel scrap	Chemicals	Total 3/	Total year to date 4/	Wrought nickel
1996:										
February	9,970	709	1,540	14	309	312	419	13,300	27,200	55
March	9,130	917	2,130	39	385	369	241	13,200	40,400	60
April	11,300	760	980	21	344	313	187	13,900	54,300	52
May	11,000	945	2,020	91	411	319	219	15,000	69,400	72
June	7,750	927	1,430	9	343	289	254	11,000	80,400	43
July	7,230	684	1,470	18	238	274	216	10,100	90,500	42
August	9,250	835	1,120	14	235	319	265	12,000	103,000	44
September	9,390	629	884	33	416	322	234	11,900	114,000	52
October	7,850	779	1,050	60	581	373	311	11,000	125,000	67
November	9,820	670	1,520	99	328	308	290	13,000	138,000	38
December	9,180	815	969	21	351	275	251	11,900	150,000	61
1997:										
January	7,640	954	1,180	111	364	263	265	10,800	10,800	57
February:										
Australia	496	200	--	7	8	--	--	711	1,680	--
Canada	4,430	652	--	388	305	243	86	6,100	11,800	2
Colombia	--	--	100	--	--	--	--	100	202	--
Dominican Republic	--	--	643	--	34	--	--	677	1,450	--
Finland	216	66	--	--	--	--	43	325	662	--
France	139	(5/)	--	--	64	--	23	226	419	7
Germany	3	(5/)	--	--	64	--	8	76	147	33
Japan	--	(5/)	--	--	11	7	26	44	151	--
New Caledonia	--	--	375	--	--	--	--	375	675	--
Norway	2,240	--	--	--	6	--	--	2,250	2,250	--
Russia	1,520	--	56	--	--	--	--	1,580	3,160	--
South Africa	--	--	3	--	--	--	--	3	120	--
United Kingdom	12	4	--	--	104	--	7	126	250	1
Zimbabwe	174	--	--	--	--	--	--	174	230	--
Other	78	23	--	--	101	143	50	395	682	10
Total	9,310	945	1,180	395	696	392	242	13,200	23,900	53
1997: January-February	16,900	1,900	2,350	507	1,060	655	506	23,900	XX	XX
1996: January-February	20,900	1,740	2,430	59	642	624	796	27,200	XX	106

XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ The nickel contents are assumed to be as follows: metallurgical-grade oxide (77%), waste and scrap (50%), and stainless steel scrap (7.5%). The chemical category includes chlorides (25%), sulfates (22%), and other salts (22%), supported catalysts (22%), and oxide, sesquioxide and hydroxide (65%).

3/ Excludes wrought nickel.

4/ May include revisions for prior months.

5/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 5
U.S. EXPORTS OF NICKEL, BY COUNTRY 1/

(Metric tons, nickel content 2/)

Period and country of destination	Cathodes, pellets, and briquets	Powder and flakes	Ferro-nickel	Metal-lurgical-grade oxide	Waste and scrap	Stainless steel scrap	Chemicals	Total 3/	Total year to date 4/	Wrought nickel
1996:										
February	72	53	60	78	903	1,430	305	2,900	6,110	23
March	80	92	181	271	859	1,140	261	2,880	8,990	52
April	149	63	119	134	965	2,760	389	4,570	13,600	27
May	82	171	220	331	782	1,520	519	3,620	17,200	31
June	79	142	73	616	800	1,530	295	3,530	20,700	19
July	7	50	650	480	778	2,650	364	4,980	25,700	30
August	44	97	299	348	703	2,200	424	4,120	29,800	64
September	6	80	179	359	1,210	2,230	292	4,360	34,200	27
October	20	79	359	420	1,280	2,270	185	4,620	38,800	63
November	19	88	324	517	918	1,610	197	3,670	42,500	59
December	21	75	433	393	960	1,850	551	4,280	46,800	21
1997:										
January	20	72	442	513	862	1,740	455	4,100	4,100	56
February:										
Australia	--	--	--	--	36	--	--	36	36	--
Belgium	1	9	--	--	9	--	5	24	102	--
Canada	--	66	--	134	487	172	44	903	2,120	2
Germany	--	7	--	--	77	--	1	86	126	--
India	--	1	207	--	9	4	--	220	474	16
Italy	--	(5/)	--	--	--	--	--	(5/)	1	--
Japan	--	6	60	--	132	92	197	487	852	--
Korea, Republic of	(5/)	1	--	--	--	367	1	370	1,050	14
Mexico	37	5	1	--	--	--	90	133	289	4
Netherlands	--	--	--	--	10	12	--	22	33	(5/)
Spain	--	1	--	--	--	681	--	682	1,060	--
Sweden	--	(5/)	--	--	169	9	--	178	451	--
Taiwan	--	2	28	--	--	205	13	249	495	--
United Kingdom	1	9	--	--	17	11	4	41	72	21
Other	--	7	120	--	58	141	160	485	856	32
Total	39	114	416	134	1,000	1,690	515	3,920	8,020	89
1997: January-February	59	186	858	647	1,870	3,430	970	8,020	XX	145
1996: January-February	79	122	489	340	1,620	3,000	462	6,110	XX	46

XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ The nickel contents are assumed to be as follows: metallurgical-grade oxide (77%), waste and scrap (50%), and stainless steel scrap (7.5%). The chemical category includes chlorides (25%), sulfates (22%), and other salts (22%), supported catalysts (22%), and oxide, sesquioxide and hydroxide (65%).

3/ Excludes wrought nickel.

4/ May include revisions for prior months.

5/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 6
U.S. IMPORTS FOR CONSUMPTION OF NICKEL ALLOYS, BY COUNTRY 1/

(Metric tons, gross weight)

Period and country of origin	Unwrought alloyed ingot	Bars, rods, and profiles	Wire	Plates and sheets	Foil	Tubes and pipes	Other alloyed articles	Total	Total year to date 2/
1996:									
February	259	152	75	92	(3/)	65	61	704	1,440
March	300	176	151	123	(3/)	107	58	915	2,360
April	561	180	158	132	(3/)	95	20	1,150	3,510
May	178	249	175	170	(3/)	67	18	857	4,360
June	221	242	116	157	(3/)	71	54	861	5,220
July	188	117	195	90	(3/)	44	107	741	5,960 r/
August	91	219	97	187	(3/)	49	615	1,260	7,220 r/
September	117	70	144	133	(3/)	50	59	573	7,800
October	249	151	120	90	(3/)	72	60	742	8,540
November	349	161	168	81	(3/)	66	29	854	9,390
December	151	178	256	145	(3/)	48	64	843	10,200
January-December	2,780	2,110	1,810	1,520	2	832	1,190	10,200	XX
1997:									
January	208	132	196	98	--	101	108	843	843
February:									
Australia	77	8	--	--	--	--	--	87	200
Belgium	27	--	(3/)	--	--	--	--	27	32
Canada	18	(3/)	7	(3/)	--	3	3	32	75
France	--	9	63	21	--	(3/)	1	94	161
Germany	2	21	45	120	--	14	1	204	439
Italy	--	77	--	--	--	3	(3/)	80	120
Japan	--	--	4	3	--	9	1	18	52
Mexico	(3/)	--	--	--	--	1	--	1	1
Netherlands	--	--	(3/)	(3/)	--	--	7	7	18
South Africa	36	--	--	--	--	--	--	36	65
Sweden	--	--	69	5	--	60	--	134	240
United Kingdom	20	87	--	(3/)	--	3	34	145	226
Other	--	--	--	--	--	--	60	60	138
Total	181	202	190	149	--	96	107	926	1,770
1997: January-February	388	334	386	248	--	196	214	1,770	XX
1996: January-February	373	364	228	208	(3/)	163	104	1,440	XX

r/ Revised. XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ May include revisions for prior months.

3/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 7
U.S. EXPORTS OF NICKEL ALLOYS, BY COUNTRY 1/

(Metric tons, gross weight)

Period and country of destination	Unwrought alloyed ingot	Bars, rods, and profiles	Wire	Plates and sheets	Foil	Tubes and pipes	Other alloyed articles	Total 2/	Total year to date 2/
1996:									
February	529	330	70	613	15	205	291	2,050	4,030
March	331	308	121	631	20	100	170	1,680	5,710
April	651	337	138	441	43	149	648	2,410	8,120
May	508	219	149	792	7	89	242	2,010	10,100
June	531	270	155	676	60	81	168	1,940	12,100
July	335	349	148	628	8	84	451	2,000	14,100
August	540	184	176	619	5	96	183	1,800	15,900
September	274	177	166	622	9	78	176	1,500	17,400
October	602	240	147	600	12	49	394	2,040	19,400
November	485	340	113	725	5	74	276	2,020	21,400
December	478	191	119	971	9	146	129	2,040	23,500
January-December	5,710	3,210	1,560	8,000	199	1,270	3,520	23,500	XX
1997:									
January	541	320	115	838	10	91	120	2,040	2,040
February:									
Australia	--	(3/)	1	66	--	(3/)	--	67	127
Belgium	4	--	--	1	--	4	--	9	29
Canada	248	24	24	50	2	44	27	419	898
France	246	9	--	(3/)	1	(3/)	19	274	561
Germany	4	35	1	24	(3/)	(3/)	3	68	146
India	--	--	--	(3/)	--	--	--	(3/)	(3/)
Ireland	--	(3/)	13	1	--	--	2	16	28
Italy	--	1	2	43	--	(3/)	(3/)	46	197
Japan	64	5	17	121	1	1	30	237	388
Korea, Republic of	5	2	(3/)	60	(3/)	1	16	85	201
Mexico	2	(3/)	29	1	--	9	1	42	71
Netherlands	6	7	13	1	--	(3/)	--	27	69
Singapore	--	(3/)	16	8	--	--	1	25	41
Spain	1	--	--	19	--	--	(3/)	20	21
Sweden	--	--	--	3	11	--	--	15	34
Switzerland	--	2	--	10	--	1	5	18	32
Taiwan	--	--	(3/)	1	--	3	22	26	83
United Kingdom	53	118	16	131	--	45	2	363	742
Other	8	18	5	14	5	28	52	134	258
Total	641	222	137	554	20	136	180	1,890	3,930
1997: January-February	1,180	542	252	1,390	30	227	300	3,930	XX
1996: January-February	976	598	129	1,300	21	323	682	4,030	XX

XX Not applicable.
1/ Data are rounded to three significant digits; may not add to totals shown.
2/ May include revisions for prior months.
3/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 8
NICKEL CONSUMPTION IN CAST AND WROUGHT PRODUCTS

	Percent	
	Wrought	Cast
March 1997:		
Stainless and heat resisting steels	100	(1/)
Alloy steels	99	1
Superalloys	78	22
Copper-nickel alloys	97	3
Other nickel-base alloys	100	(1/)

1/ Less than 1/2 unit.

TABLE 9
NICKEL PRICES

Date	Cathode NY Dealer $/lb.	LME Cash $/t	LME Cash $/lb.	18/8 Stainless steel scrap Pittsburgh $/long ton(gw)
Average for month of:				
1996:				
February	3.585	7,734.525	3.508	810
March	3.647	7,895.868	3.582	900
April	3.399	7,315.523	3.318	816
For week ending:				
1997:				
February 7	3.48-3.59	7,611.500	3.453	800-820
February 14	3.58-3.66	7,702.100	3.494	800-820
February 21	3.59-3.63	7,710.600	3.497	800-820
February 28	3.69-3.75	7,913.900	3.590	800-820
March 7	3.72-3.81	8,065.900	3.659	890-910
March 14	3.69-3.79	7,943.300	3.603	890-910
March 21	3.66-3.77	7,882.100	3.575	890-910
March 28	3.54-3.68	7,641.250	3.466	890-910
April 4	3.55-3.58	7,593.875	3.445	890-910
April 11	3.39-3.54	7,237.400	3.283	775-800
April 18	3.30-3.42	7,203.200	3.267	775-800
April 25	3.39-3.48	7,305.600	3.314	775-800

Sources: Platt's Metals Week and American Metal Market.